OKLAHOMA.

Temperature.—Maximum, 109, at Gate City, 5th; minimum, 47, at Gate City, 30th; greatest monthly range, 62, at Gate City; least monthly range, 31, at Lehigh.

Precipitation.—Greatest monthly, 9.03, at South McAlester; least monthly, 1.72, at Guthrie.

Wind.—Prevailing direction, south.—*J. I. Widmeyer, Observer, Weather Bureau, Oklahoma City, director.*

PENNSYLVANIA.

Temperature.—The mean was 1.0 above the normal; maximum, 99, at Selins Grove, 9th; minimum, 42, at Saegerstown, 29th; greatest monthly range, 53, at Saegerstown; least monthly range, 32, at Erie and Dyberry.

Precipitation.—The average was 0.50 below the normal; greatest monthly, 7.64, at Columbus; least monthly, 1.07, at McConnellsburg.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; H. L. Ball, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 96, at Florence, 11th; minimum, 59, at Greenville, 19th.

Precipitation.—Greatest monthly, 9.72, at Columbia; least monthly, 1.38, at Statesburg.

Wind.—Prevailing direction, southwest.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

SOUTH DAKOTA.

Temperature.—The mean was 2.2 above the normal; maximum, 110, at Hotch City, 16th; minimum, 31, at De Smet, 30th; greatest monthly range, 69, at Frankfort; least monthly range, 45, at Ashcroft.

Precipiiation.—The average was 0.20 above the normal; greatest monthly, 6.33, at Millbank; least monthly, 0.63, at Pierre.

Wind.—Prevailing direction, southeast.—*S. W. Glenn, Local Forecast Official, Weather Bureau, Huron, director.*

TENNESSEE WEATHER AND CROP SERVICE.

Temperature.—The mean was 1.0 above the normal; maximum, 98, at Milan, 7th, and at Covington (*b*), 8th; minimum, 52, at Clarksville, 31st; greatest monthly range, 44, at Covington; least monthly range, 25, at Bethel Springs.

Precipitation.—The average was 0.21 above the normal; greatest monthly, 8.17, at Jacksboro; least monthly, 2.07, at Lynnville.

Wind.—Prevailing direction, southeast.—*J. B. Marbury, Local Forecast Official, Weather Bureau, Nashville, director.*

TEXAS.

Temperature.—The mean was 2.7 below the normal; maximum, 105, at Childress, 7th, and at Roby, 12th; minimum, 47, at Hartley, 31st; greatest monthly range, 55, at Hartley; least monthly range, 16, at Flower Bluff.

Precipitation.—The average was 1.88 above the normal; greatest monthly, 9.10, at Camp Eagle Pass; least monthly, 0.07, at El Paso.

Wind.—Prevailing direction, southeast.—*D. D. Bryan, Galveston, director; I. M. Cline, Local Forecast Official, Weather Bureau, assistant.*

UTAH.

Severe drought in the southern part of the territory caused a loss of cattle on the ranges.

Temperature.—Maximum, 113, at Saint George, 4th; minimum, 23, at Soldiers Summit, 28th, and at Scofield, 29th; greatest monthly range, 72, at Soldiers Summit; least monthly range, 55, at Logan.

Precipitation.—Greatest monthly, 2.13, at Soldiers Summit; least monthly, 0.00, at several stations.—*G. N. Salisbury, Observer, Weather Bureau, Salt Lake City, director.*

VIRGINIA.

Temperature.—Maximum, 104, at Nottoway, 10th; minimum, 45, at Big Stone Gap, 31st; greatest monthly range, 48, at Nottoway; least monthly range, 27, at Birdsnest.

Precipitation.—Greatest monthly, 8.84, at Stannardsville; least monthly, 0.80, at Lynchburg.

Wind.—Prevailing direction, southwest.—*Dr. E. A. Craighill, Lynchburg, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WEST VIRGINIA.

Drought prevailed during the month and vegetation and pastures were more or less damaged.

Temperature.—Maximum, 96, at Morgantown, 17th; minimum, 41, at Davis, 14th and 15th; greatest monthly range, 47, at Davis; least monthly range, 22, at Huntington.

Precipitation.—Greatest monthly, 6.95, at Weston; least monthly, 0.71, at Spencer.

Wind.—Prevailing direction, west.—*W. W. Dent, Observer, Weather Bureau, Parkersburg, director.*

WISCONSIN.

Temperature.—The mean was about 1.0 below the normal; maximum, 96, at Richland Center, 8th; minimum, 32, at Rhinelander, 31st.

Precipitation.—The average was about 1.00 below the normal, except in a small area bordering on Lake Michigan, where it was slightly above; greatest monthly, 6.21, at Raymond; least monthly, 1.12, at Cadiz.

Wind.—Prevailing direction, southeast.—*W. L. Moore, Local Forecast Official, Weather Bureau, Milwaukee, director.*

WYOMING.

Temperature.—Maximum, 105, at Wheatland, 4th; minimum, 29, at Camp Pilot Butte, 29th; greatest monthly range, 67, at Wheatland; least monthly range, 54, at Lander.

Precipitation.—Greatest monthly, 1.10, at Wheatland; least monthly, 0.00, at Casper.

Wind.—Prevailing direction, west.—*E. M. Ravenscraft, Observer, Weather Bureau, Cheyenne, director.*

CONTRIBUTIONS AND ORIGINAL ARTICLES.

THE WARM WAVES OF JULY AND AUGUST, 1892.

[By E. B. GARRIOTT, Weather Bureau.]

Warm waves and *hot winds* are distinctly dissimilar types of the same class of phenomena. In the United States warm waves are the result of cyclonic wind circulation whereby air over an extended area is replaced by air drawn from warmer and more southern latitudes. When the warm air passes for a lengthened period over districts where the soil is dry, where vegetation is not cooled by the evaporation of moisture, and where an absence of moisture in the air subjects the earth to the full force of the sun's rays, the dry, withering heat of the hot wind is experienced.

The periods of high temperature of the latter part of July and the early part of August were notable in that they partook somewhat of the character of both of the types referred to. The July warm wave produced exceptionally high temperatures; its prevalence was generally unattended, however, by hot winds, owing to previous abundant precipitation which had stored the earth with moisture. The warm wave of the first decade of August following closely the July dry and heated period was severely felt. In some districts drought conditions prevailed, and hot winds were destructive to vegetation.

The July warm wave appeared over Montana on the 18th, with maximum temperature 98° at Havre. It occupied the Missouri Valley from the 18th to the 27th, with daily maximum temperature above 90°, and a maximum of 100° at Omaha, Nebr., on the 23d. In the middle and upper Mississippi valleys the maximum was above 90° from the 22d to the 29th, with highest readings on the 24th, when 96° was registered at Saint Louis, Mo. In the Ohio Valley the heated period began on the 22d, and the daily maximum was above 90° until the 29th, with an extreme of 98° at Cincinnati, Ohio, on the 24th. In the middle Atlantic and New England states the intense heat continued from the 24th to the 30th, the highest temperature being reached on the 26th, when the maximum was 96° at Boston, Mass., 101° at Philadelphia, Pa., 99° at Washington, D. C., and 100° at Lynchburg, Va. The August warm wave appeared over Montana on the 3d, with maximum temperature 97° and 98° at Havre and Miles City, respectively. It extended over the Missouri Valley on the 4th, where the temperature continued high until the 8th, with daily maximum above 100°. The heated period continued in the middle and upper Mississippi valleys from the 5th to the 9th, with daily maximum above 90°, the highest reading at Saint Louis, Mo., 97°, being noted on the 8th. In the Ohio Valley the temperature ranged high from the 6th to the 9th, although the heat was less intense than that experienced in July. Likewise in the middle Atlantic and New England states, where the warm wave lingered from the 8th to the 11th, the temperature was lower than in the latter part of July.

A prominent fact noted in the investigation of these and other periods of intense heat is the sluggish movement of the warm wave crests over the central valleys and the Eastern States; two to three days are required for the development of extreme temperatures, and several days are required for the earth and atmosphere to cool to the normal condition. The sluggish movement is apparently due to a stagnation of the more general atmospheric conditions, whereby winds are permitted to blow persistently from warmer latitudes. Warm waves of the central and eastern districts of the United States are attended by winds which blow not only from warmer latitudes, but also from the interior; they are attended by south to southwest winds. The conditions by which these winds are produced over the sections referred to are low barometric pressure over the north-central and northwestern districts, and high pressure over the southeastern states. A continuation of this distribution of pressure is necessary to the persistence of the warm wave and also to the attainment of exceptionally high temperature. The temperature in districts visited by a warm wave is at times higher than the temperature in regions to the windward; this is particularly true in the case of long continued warm periods. In such cases the hot wind element is developed. The earth's surface is gradually dried by the warm winds, and when the supply of moisture it contains is exhausted and it is no longer cooled by the evaporation of moisture it becomes heated; it acts as a receiver and storer of heat. The

overlying air receives no moisture and is heated both by the direct rays of the sun and by heat radiated from the hot earth.

During the warm periods of July and August the barometric pressure continued low in north-central and northwestern districts, high pressure obtained over the southeastern states, and southwesterly winds prevailed over the central and Eastern states. In districts visited by the warm waves little or no rain fell, and in each locality the heat became more intense day by day until relief came in the form of gradually cooling conditions and showers. During these periods areas of high and low barometric pressure showed marked inactivity. Observations of the lower atmosphere show, however, that the wind movements were greater than usual, except in the Ohio Valley. Mount Washington reports show a marked deficiency of wind before and after the crest of the warm waves crossed New England, and a decided excess of wind during the days of their passage. Wind records from stations in the Rocky Mountain regions show slight variations from the average wind movement.

Considered with reference to the area affected the warm wave may be considered a local phenomena; it is a feature of the cyclonic system of winds. It rarely covers one-half of the United States at one time, and during its prevalence over one part of the country unusually low temperatures obtain over other portions. During the early part of the July warm period the weather was cooler than usual on the north Pacific coast, and at the time the greatest heat was experienced over the Eastern States a marked deficiency was shown over the plateau and northern Rocky Mountain regions. During the August warm period the weather was cooler than usual over extreme southern parts of the country and along the Pacific coast.

An area of low barometric pressure may traverse a large portion of the circumference of the Northern Hemisphere and carry with it elements for the development of warm waves in sections where conditions favor such development; that is over the continents. The cyclonic area which caused the August warm wave can be traced to Europe. This area of low pressure advanced from Newfoundland to the British Isles from the 9th to the 13th, was central north of the British Isles on the 14th and 15th, reached the Norwegian coast on the 16th, and thence apparently drifted slowly over northern Europe. From the 14th to the 18th the barometric pressure was low over northern and northwestern Europe, and was higher over southern Europe. During this period exceptionally high temperatures were reported in Belgium, central, western, and northern France, and southern Germany, and the weather was cooler than usual over the British Isles, Holland, Norway, and eastern Germany. In southern Europe and Algeria the average temperature obtained.

The history of notable warm waves warrants the conclusion that excesses of temperature in one part of a continent are compensated by deficiencies in other portions.

The following tables show the daily maximum temperature, the daily mean temperature, and the departure of the daily mean from the daily normal temperature at selected stations of the Weather Bureau in districts traversed by the warm waves of July 18 to August 11, 1892:

Daily maximum and daily mean temperature, and departure from daily normal temperature, July 17 to 31, 1892.

		17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.
		°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
Havre, Mont	Maximum	76	83	**93**	85	88	85	82	82	83	68	66	76	85	79	87
	Mean	66	66	70	70	**71**	70	68	66	68	58	54	54	62	66	70
	Departure	− 2	− 2	+ 1	+ 1	+ **2**	+ 1	− 1	− 3	− 2	−12	−16	−16	− 8	− 5	− 1
Bismarck, N. Dak	Maximum	81	84	88	84	83	**90**	79	86	86	82	66	72	77	84	77
	Mean	72	72	72	73	73	**77**	72	70	70	72	62	58	62	71	65
	Departure	+ 2	+ 2	+ 1	+ 2	+ 2	+ **6**	0	− 2	− 2	0	−11	−15	−11	− 3	− 9
Omaha, Nebr	Maximum	80	90	95	97	98	93	**100**	98	97	96	97	65	74	80	88
	Mean	70	80	86	86	83	82	**90**	86	86	85	86	60	64	70	74
	Departure	− 9	+ 1	+ 7	+ 8	+ 5	+ 4	+**13**	+ 9	+ 9	+ 9	+10	−16	−12	− 5	− 1
Abilene, Tex	Maximum	98	97	97	96	97	96	96	96	97	93	94	**98**	79	84	90
	Mean	**88**	86	86	86	86	84	86	85	86	84	84	86	72	77	81
	Departure	+ **4**	+ 2	+ 2	+ 2	+ 2	0	+ 2	+ 2	+ 3	+ 1	+ 1	+ 3	−11	− 6	− 2
Duluth, Minn	Maximum	82	64	87	83	**93**	78	84	83	89	70	86	72	80	80	80
	Mean	69	62	72	72	**80**	72	73	72	77	68	74	66	68	70	72
	Departure	0	− 7	+ 4	+ 4	+**12**	+ 5	+ 6	+ 5	+10	+ 2	+ 8	0	+ 3	+ 5	+ 7
Saint Louis, Mo	Maximum	82	86	92	93	86	92	95	**96**	95	93	92	90	78	80	85
	Mean	74	76	84	82	78	85	**87**	**87**	**87**	86	84	82	73	72	77
	Departure	− 7	− 5	+ 3	+ 2	− 2	+ 5	+ 7	+ **8**	+ 8	+ 7	+ 5	+ 3	− 5	− 6	− 1
Montgomery, Ala	Maximum	88	91	90	87	92	94	92	**95**	90	89	90	91	92	94	95
	Mean	81	82	82	80	82	83	**84**	**84**	80	80	80	82	82	**84**	84
	Departure	− 2	− 1	− 1	− 3	0	+ 1	+ 2	+ 2	− 2	− 2	− 2	+ 1	+ 1	+ **3**	+ 3
Alpena, Mich	Maximum	78	83	83	82	88	82	78	**90**	79	87	75	79	72	70	74
	Mean	63	70	71	68	72	73	68	**80**	71	74	70	72	64	59	62
	Departure	− 4	+ 3	+ **4**	+ 2	+ 6	+ 7	+ 2	+**16**	+ 6	+ 9	+ 5	+ 7	0	− 5	− 2
Cincinnati, Ohio	Maximum	77	82	86	92	86	91	94	**98**	97	94	93	94	90	78	85
	Mean	68	70	78	80	78	82	84	**86**	**86**	84	84	84	82	75	77
	Departure	−11	− 9	− 1	+ 2	0	+ 4	+ 6	+ **9**	+ **9**	+ 7	+ 7	+ 7	+ 6	− 1	+ 1
Boston, Mass	Maximum	76	81	83	83	75	88	86	90	94	**96**	93	83	79	79	70
	Mean	65	70	73	76	66	76	78	80	84	**85**	82	76	72	74	65
	Departure	− 7	− 2	+ 1	+ 4	− 5	+ 5	+ 7	+ 9	+13	+**14**	+11	+ 6	+ 2	+ 4	− 5
Philadelphia, Pa	Maximum	77	81	77	88	85	88	90	91	93	**101**	96	96	98	87	80
	Mean	68	70	70	77	74	76	79	82	84	88	87	86	**89**	80	75
	Departure	−10	− 8	− 6	+ 2	− 1	0	+ 3	+ 6	+ 8	+11	+10	+10	+**14**	+ 5	0
Washington, D. C	Maximum	75	81	78	88	84	89	89	93	97	**99**	98	93	94	92	88
	Mean	67	68	72	77	76	78	78	82	87	**88**	**88**	82	84	83	80
	Departure	−14	−12	− 8	− 2	− 3	0	0	+ 4	+10	+**12**	+**12**	+ 6	+ 8	+ 7	+ 5
Lynchburg, Va	Maximum	76	77	87	91	87	91	95	96	98	**100**	**100**	97	97	88	93
	Mean	69	70	76	80	77	80	82	82	86	87	**88**	82	84	81	83
	Departure	− 9	− 8	− 2	+ 2	− 1	+ 2	+ 5	+ 5	+ 9	+10	+**11**	+ 6	+ 8	+ 5	+ 5
Mount Washington, N. H.	Maximum	40	47	52	44	48	56	55	64	**65**	56	56	56	63	59	49
	Mean	34	42	48	40	42	50	50	56	57	54	52	53	**59**	52	47
	Departure	−14	− 4	+ 2	− 6	− 3	+ 5	+ 4	+11	+**12**	+ 5	+ 4	+ 5	+11	+ 5	− 1

Daily maximum and daily mean temperature, and departure from daily normal temperature, August 1 to 13, 1892.

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
		°	°	°	°	°	°	°	°	°	°	°	°	°
Havre, Mont	Maximum	**98**	88	97	94	91	91	72	75	79	91	94	80	88
	Mean	74	66	78	**81**	70	71	63	60	64	68	72	68	67
	Departure	+ 3	− 5	+ 6	+ **9**	− 2	0	− 8	−10	− 6	− 1	+ 3	0	0
Bismarck, N. Dak	Maximum	86	86	89	**98**	84	91	81	76	78	79	92	97	91
	Mean	68	74	72	80	72	76	72	68	65	67	74	**86**	76
	Departure	− 6	+ 1	− 1	+ 8	0	+ 4	+ 1	− 3	− 6	− 3	+ 4	+**17**	+ 7
Omaha, Nebr	Maximum	83	90	88	88	94	89	91	**100**	84	82	87	88	78
	Mean	72	78	79	78	**83**	80	80	**90**	76	72	77	79	70
	Departure	− 3	+ 3	+ 4	+ 3	+ **9**	+ 6	+ 6	+**16**	+ 2	− 2	+ 3	+ 5	− 3

Daily maximum and daily mean temperature, &c.—Continued.

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
		°	°	°	°	°	°	°	°	°	°	°	°	°
Abilene, Tex	Maximum	93	90	89	93	94	**95**	93	91	85	90	92	94	**96**
	Mean	80	78	78	80	82	82	82	82	78	80	83	83	**85**
	Departure	− 3	− 5	− 5	− 3	0	0	0	0	− 4	− 2	+ 1	+ 1	+ 4
Duluth, Minn	Maximum	68	**86**	81	74	85	74	**86**	76	73	76	68	68	77
	Mean	62	70	70	67	**73**	69	72	69	66	66	63	64	68
	Departure	− 3	+ 5	+ 5	+ 2	+ 8	+ 4	+ 7	+ 4	+ 2	+ 2	− 1	0	+ 4
Saint Louis, Mo	Maximum	86	87	95	88	96	92	96	**97**	91	82	85	85	82
	Mean	78	76	84	81	84	83	82	**86**	82	78	78	77	76
	Departure	0	− 2	+ 6	+ 3	+ 6	+ 5	+ 4	+ 8	+ 5	+ 1	+ 1	0	− 1
Montgomery, Ala	Maximum	93	88	89	92	**94**	92	89	86	85	90	92	88	88
	Mean	**83**	80	80	81	81	82	80	78	78	79	82	80	80
	Departure	+ 2	− 1	− 1	0	0	+ 1	− 1	− 3	− 2	− 1	+ 3	0	0
Alpena, Mich	Maximum	71	73	80	71	71	76	**85**	79	82	76	72	74	77
	Mean	66	62	70	60	62	64	70	**74**	**74**	70	66	65	67
	Departure	+ 2	− 2	+ 6	− 4	− 2	0	+ 6	+10	+11	+ 7	+ 3	+ 2	+ 4
Cincinnati, Ohio	Maximum	80	85	88	84	85	86	89	**93**	92	88	83	79	79
	Mean	75	74	74	79	73	76	78	**82**	**82**	80	76	72	70
	Departure	− 1	− 2	− 2	+ 3	− 3	0	+ 2	+ 6	+ 7	+ 5	+ 1	− 3	− 5
Boston, Mass	Maximum	66	65	71	87	70	83	80	85	89	**94**	**94**	77	69
	Mean	64	62	66	76	73	74	71	74	80	**85**	84	72	66
	Departure	− 6	− 8	− 4	+ 6	+ 3	+ 4	+ 1	+ 4	+11	**+16**	+15	+ 3	− 3
Philadelphia, Pa	Maximum	76	73	85	87	85	87	85	88	92	**96**	92	82	78
	Mean	71	70	75	78	78	76	78	78	83	**84**	**84**	78	71
	Departure	− 5	− 5	0	+ 2	+ 2	0	+ 4	+ 3	+ 9	+ 9	**+10**	+ 3	− 4
Washington, D. C	Maximum	85	84	85	87	83	86	85	89	**95**	**95**	92	82	80
	Mean	78	78	76	78	74	74	76	78	**84**	**84**	82	78	72
	Departure	+ 3	+ 3	+ 1	+ 3	− 1	− 1	+ 1	+ 3	**+10**	**+10**	+ 8	+ 4	− 2
Lynchburg, Va	Maximum	88	86	83	91	89	90	91	93	**95**	94	93	87	84
	Mean	80	78	78	78	78	77	78	80	**82**	**82**	**82**	80	72
	Departure	+ 4	+ 2	+ 2	+ 2	+ 2	+ 1	+ 2	+ 4	+ 7	+ 7	+ 7	+ 5	− 3
Mount Washington, N. H	Maximum	59	56	54	56	51	51	46	56	58	**62**	59	54	53
	Mean	50	52	51	50	48	45	40	48	54	**56**	**56**	52	48
	Departure	+ 2	+ 3	+ 4	+ 2	0	− 3	− 9	0	+ 6	+ 8	+ 7	+ 1	− 1

METEOROLOGICAL TABLES.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, August, 1892.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Alabama.	°	°	°	*Ins.*
Bermuda *†[5]	93	68	79.0	2.43
Bessemer	93	68	79.4	5.13
Brewton †	100	65	81.4	13.55
Carrollton *†[1]	90	70	78.2	2.19
Chepultepec †	84	68	77.5[1]	6.50
Citronelle †	89	70	79.2	7.87
Claiborne Landing †	.....	.....	.....	1.80
Cordova †	.....	.....	.....	7.26
Daphne †	96	67	80.9	11.77
Decatur *a* †	.....	.....	.....	6.39
Decatur *b* †	92	56	74.5	5.66
Eufaula *a* †	93	69	79.6	10.09
Evergreen †	91	62	79.0	9.13
Fayette †	91	64	78.4	6.93
Florence *a* †	.....	.....	.....	6.24
Florence *b* †	91	61	76.3	3.92
Fort Deposit †	92	67	79.9	3.08
Gadsden †	.....	.....	.....	8.91
Geneva †	96	70	81.6	8.03
Greensboro †	91	69	77.2	5.53
Healing Springs †	95	63	79.5	5.41
Highland Home †	89	63	77.7	6.04
Jasper †	98	61	76.9	8.20
Livingston *a* † [1]	90	69	76.8	4.74
Livingston *b* †	93	68	79.4	4.95
Lock No. 4*	.....	72	.....	4.71
Lynn †	.....	.....	.....	6.09
Marion † [2]	93	68	79.3	4.14
Maysville †	88	63	77.3	6.89
Mount Willing †	89	70	80.3	7.98
Newburg †	90	61	76.7	9.40
Newton *† [1]	92	62	80.1	7.35
Opelika †	94	70	80.6	4.94
Oxanna *† [1]	88	62	75.5	4.47
Pine Apple †	94	63	79.8	5.99
Pittsboro †	92	73	81.5	4.45
Pushmataha †	90	69	77.7	4.09
Selma *a* †	.....	.....	.....	5.51
Sturdevant †	.....	.....	.....	8.10
Talladega †	.....	.....	.....	6.15
Tallassee Falls †	.....	.....	.....	5.40
Thomasville †	94	68	79.8	7.95
Tuscaloosa †	92	56	79.3	6.53
Tuscumbia *a* *[1]	91	67	76.1	3.52
Alabama—Cont'd.				
Tuscumbia *b* †	93	62	78.2	5.30
Union Springs *a* †	94	63	79.2	5.09
Union Springs *b* †	94[1]	67	80.5[1]	5.44
Valley Head † [1]	88	56	73.3	5.53
Wetumpka *	.....	72	.....	8.14
Wilsonville †	.....	.....	.....	8.16
Alaska.				
Killisnoot † [1]	75	41	51.6	6.75
Metlakahtla †	72	46	57.8	9.36
Arizona.				
Ariz. Can. Co. Dam. †	114	65	90.4	0.49
Benson *[1]	102	74	85.7	0.07
Calabasas †	98	58	77.4	1.71
Casa Grande *[1]	114	74	92.7	0.64
Crittenden †	100*	58	.....	1.89
Dos Cabezos * † [1]	96	66	78.0	1.10
Dragoon †	.....	.....	.....	1.54
Dragoon Summit *[6]	95	68	82.3	1.66
Dudleyville †	108	64	85.4	1.41
Eagle Pass*	98	60	.....	2.63
Farleys Camp [2]	.....	.....	89.5	0.20
Florence †	114	62	88.6	0.52
Fort Apache	97	46	70.6	1.30
Fort Bowie	93	57	77.3	2.65
Fort Grant	101	58	79.4	1.00
Fort Huachuca	97	53	76.1	2.64
Fort Mohave †	123	63	94.2	0.00
Gila Bend *a* * † [1]	110	78	93.4	0.60
Gila Bend *b* *[1]	120	80	96.7	0.27
Holbrook * † [1]	101	46	79.2	0.47
Maricopa *[1]	115	75	93.9	0.25
Mount Huachuca †	95	55	75.5	2.10
Natural Bridge †	.....	.....	.....	0.69
Navajo Springs †	.....	.....	.....	0.06
Oracle † [1]	103	61	79.9	.....
Oro	.....	.....	.....	2.10
Pantano *[1]	103	70	86.3	2.76
Payson *[1]	105	62	76.0	0.63
Phœnix *a* †	113	65	92.2	0.00
Phœnix *b* †	109	58	86.0	0.00
Red Rock *[5]	118	68	96.6	2.75
Reymert †	113	57	84.2	0.25
Rye	.....	.....	.....	0.32
Saint Johns †	.....	.....	.....	0.44

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona—Cont'd.	°	°	°	*Ins.*
San Carlos	112	58	83.2	1.90
San Simon *[1]	108	75	86.9	0.03
Show Low	.....	.....	.....	0.84
Signal †	116	63	89.6	0.52
Teviston	.....	.....	.....	T.
Texas Hill *[1]	118	75	95.1	0.60
Tucson *a* †	110	68	87.4	1.84
Tucson *b* *[1]	107	70	84.7	1.23
Walnut Grove †	.....	.....	.....	0.07
Walnut Ranch *† [1]	95	62	74.4	3.40
Whipple Barracks	101	48	73.4	2.04
Wilgus †	.....	.....	.....	1.18
Willcox *[1]	100	59	80.4	0.94
Winslow *† [5]	106	58	80.7	.....
Yuma *[1]	112	74	93.1	0.03
Arkansas.				
Arkadelphia †	.....	.....	.....	6.50
Arkansas City †	.....	.....	.....	2.68
Bee Branch †	99[k]	52[k]	77.5[k]	3.90
Black Rock *† [1]	96	60	80.3	3.31
Brinkley †	94	57	77.5	4.80
Camden *a* †	.....	.....	.....	4.54
Camden *b* † [1]	94	66	77.7	5.03
Conway *[1]	92	56	76.4	4.63
Dallas † [1]	98	57	75.5	5.54
Dardanelle †	.....	.....	.....	4.91
Eldorado †	94	60	75.5	3.68
Fayetteville † [1]	97	47	74.3	5.39
Forrest †	94	59	79.5	5.27
Fulton †	.....	.....	.....	3.75
Gaines Landing †	.....	.....	.....	2.72
Harrison †	96	48	76.0	0.78
Helena *a* †	.....	.....	.....	6.67
Helena *b* †	98	60	79.1	5.97
Hope † [1]	100	63	78.3	3.69
Hot Springs	98	52	76.0	5.06
Keesees Ferry *[1]	106	52	77.7	2.88
Kirby †	94	54	77.6	6.39
Lonoke *[1]	100	60	80.6	4.75
Madding [2]	.....	.....	79.0	3.51
Malvern †	96	66	80.2	2.61
Mount Nebo †	90	58	77.0	5.01
New Gascony *[1]	96	66	79.4	3.34
Newport *a* †	.....	.....	.....	5.09
Newport *b* †	99	58	79.2	5.90
Arkansas—Cont'd.				
Osceola † [1]	93	57	77.2	2.53
Pine Bluff †	98	64	80.6	4.23
Prescott †	93	62	79.0	5.48
Rogers †	.....	.....	.....	1.81
Russellville †	97	59	79.6	3.59
Stuttgart †	96	56	78.6	6.15
Texarkana †	97	62	80.6	5.12
Washington *a* *[1]	87	68	77.3	.....
Washington *b* *[1]	92	68	77.4	5.17
Winslow *[1]	86	61	74.6	4.29
California.				
Agnew [1]	100	46	66.0	0.00
Alcalde *[1]	114	60	86.5	0.00
Almaden *[1]	99	55	68.1	0.00
Alvarado † [1]	97	45	66.9	0.00
Anaheim *[1]	98	64	74.7	0.00
Antioch *[1]	104	59	74.8	0.00
Aptos *[1]	81	50	63.4	0.00
Arcata	.....	.....	.....	0.00
Arlington Heights	103	51	75.4	0.00
Athlone *[1]	116	64	84.7	0.00
Auburn *[1]	105	58	76.6	0.00
Bakersfield *a* *[1]	110	69?	86.6?	0.00
Bakersfield *b* †	110	49	78.0	0.00
Beaumont *[1]	107	54	77.7	0.00
Belmont *[1]	98	52	70.5	.....
Berendo *[1]	111	67	85.8	0.00
Berkeley [1]	90	51	69.9	0.00
Bishop Creek *[1]	103	65	81.9	0.00
Boca *[1]	92	32	61.1	0.00
Borden *[1]	113	58	82.0	0.00
Boulder Creek *[1]	110	48	64.9	0.00
Brentwood *[1]	104	58	75.7	0.00
Brighton *[1]	111	59	78.1	0.00
Byron *[1]	108	52	76.3	0.00
Caliente *[1]	105	60	80.8	0.00
Calistoga *[1]	103	52	70.1	0.00
Capitola *[1]	82	54	65.2	0.00
Castroville *[1]	78	52	63.2	0.00
Centerville *[1]	106	60	68.8	0.00
Chico *[1]	110	58	76.7	0.00
Cisco *[1]	83	40	61.7	0.00
Claremont † [1]	100	48	72.4	0.00
Colfax *[1]	105	48	75.3	0.00
Colton *[1]	106	52	73.7	0.00